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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/423,981	02/18/2000	SHOGO MURAMATSU	991304	7398

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EXAMINER

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 07/01/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/423.981

Applicant(s)

MURAMATSU ET AL.

Examiner

Jason L. Savage

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-- The MAILING DATE of this communication appears on the cover sheet with the corresp nd nce address --

Peri d for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-4 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-4 and 6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no basis for the newly added limitations in claims 1 or 2 that 'some of the granular Si particle having a particle size greater than 10 μm '.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6,090,497) in view of Kawagoe et al. (US 5,864,745).

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Mori teaches a coated member wherein the coating is a wear resistant Al-Si alloy having a content of Si from 26-80 weight % and further containing fine Si particles from 0.01 to 10 μm dispersed therein (col. 2, ln. 27-37). The wear resistant coating may also contain additional materials such as 0.05-10%Mg, 0.5-10%Cu, 0.1-20% Sn, and between 0.05-15% of Mn, Fe, and/or Ni (col. 3, ln. 1-8; col. 3, ln. 65 – col. 4, ln. 9). Mori further teaches that the wear resistant coating which is formed by thermally spraying is suitable for compressor parts such as in automobiles (col. 5, ln. 44 – col. 6, ln. 3).

Regarding the limitation that the ratio of the short-diameter to long diameter Si particles is 1/3 or more, the particles in Figure 1 of Mori appear to fit well within the claimed ratio as most of the particles appear to be more rounded in shape.

Regarding the limitation that the alloy contain some particles having a size greater than 10 μm , Mori teaches the particles in the comparative example are as large as 20 μm (col. 9, ln. 24-25). Also, the teaching of Mori that particle sizes greater than 10 μm are undesirable because it causes unfavorable acceleration of abrasion of a counter material (col. 4, ln. 20-22) shows that Mori has produced an alloy having some particles greater than 10 μm . All the disclosures in a reference must be evaluated for what they fairly teach one of ordinary skill in the art even though the art teachings relied upon are phrased in terms of a non-preferred embodiment or even as being unsatisfactory for the intended purpose, *In re Boe*, 148 USPQ 507 (CCPA 1966); *In re Smith*, 65 USPQ 167 (CCPA 1945); *In re Nehrenberg*, 126 USPQ 383 (CCPA 1960); *In re Watanabe*, 137 USPQ 350 (CCPA 1963). Furthermore, the claim does not require that all of the

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particles are greater than 10 μm , Applicant has failed to show how having a limited number of particles greater than 10 μm in size would provide a patentable distinction over the prior art.

Regarding the limitation that the flame-spraying method used is HVOF, HVOF is a well known method of thermal-spraying. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used any known method of thermal-spraying, including HVOF to have applied the aluminum-alloy coating. Furthermore, the HVOF process does not provide a distinction over other flame-spraying methods since Applicant admits on page 5, lines 28-29 of the Specification that various flame-spraying methods can be employed to form the claimed aluminum-alloy. Finally, HVOF is a process limitation, when there is a substantially similar product, as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct not the examiner to show that same process of making, see *In re Brown*, 173 U.S.P.Q. 685, and *In re Fessmann*, 180 U.S.P.Q. 324.

Mori does not teach the roughening of the substrate surface; however, it is well known in the art to roughen the substrate surface in order to improve the adhesion of the overlying coating. Kawagoe teaches a flame sprayed aluminum silicon alloy (col. 13, ln. 5-7) as well as shot blasting the substrate to roughen the surface before applying the wear resistant coating (col. 15, ln. 59 – col. 6, ln. 31). It would have been obvious to one of ordinary skill in the art at the time of the invention to have roughened the surface of the substrate prior to applying the wear resistant coating of Mori in order to have increased the adhesion between the substrate and the coating.

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Regarding the limitation that the flame-sprayed aluminum alloy has adhesive strength of film higher than that of a flame-sprayed Ni film, such an adhesive strength would have been inherent. The Patent and Trademark Office can require Applicant to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on Applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 U.S.P.Q. 431 (CCPA 1977).

Regarding the material ranges in claim 3, although the weight percentages of the additional materials are not within the exact same ranges claimed by Applicant, all of the material ranges taught by Mori overlap the material ranges claimed by Applicant which obviates claim 3.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 6,090,497) in view of Kawagoe et al. (US 5,864,745) as applied to claims 1-4, and in further view of Wilkosz et al. (US 5,655,432).

Mori and Kawagoe teach what is set forth above but it does not teach a layer covering the outer surface of the wear resistant coating. However, it is known in the art to coat wear resistant

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components with lubricating coatings in order to improve the seizure resistance during dry conditions.

Wilkosz teaches an aluminum-silicon swash-plate compressor which has a coating comprising a PTFE resin and lubricating particles such as carbon and MoS_2 dispersed therein (col. 3, ln. 38-60). This coating reduces the friction of the swash-plate and increases its durability (col. 3, ln. 5-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the lubricating or friction reducing coatings of Wilkosz on the exterior surface of the coating taught by Mori as modified by Kawagoe in order to have improved the seizure resistance and to increase the durability of the swash-plate compressor, particularly during dry conditions.

Response to Arguments

6. Applicant's arguments filed 6-24-02 have been fully considered but they are not persuasive.

Applicant argues that the morphology of Mori and the present invention are different and that the ratio of the short diameter to long diameter particles is less than 1/3. Viewing Figure 1 of Mori, the particles appear to fit well within the claimed ratio as most of the particles appear to be rounded in shape. Other than what is shown in the figure, the Examiner can find no other teaching in Mori that would prove that the particles of Mori would not fall have the claimed ratio

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of short diameter to long diameter particles. It is unclear how Applicant has determined that the Si particles of Mori are needle-shaped since the Figure clearly shows many particles that are rounded in shape. Applicant appears to be arguing what was stated in the specification on page 3 in lines 24-36 that conventional melted alloys and conventional rolled alloys have a one-directional lengthwise property; however, Mori does not form the alloy by melting or rolling, it forms the alloy by thermally spraying.

Regarding the argument that the inclusion of relatively coarse Si particles of more than 10 μm contributes to enhance both wear resistance and seizure resistance whereas the alloy of Mori would only enhance the wear resistance due to the particle size being less than 10 μm , this argument is not commensurate in scope with the claims since no wear or seizure resistance has been claimed. Also, Applicant has not taught or shown how particles greater than 10 μm would provide the alloy with enhanced seizure resistance. Furthermore, Mori explicitly teaches an alloy having particle sizes of 20 μm in the comparative example.

Applicant further argues that the alloys according to the claimed invention differ from those of Mori in terms of one or more proportions, structure, and/or properties and these differences produce unexpected or surprising results. It is unclear to which unexpected or surprising results Applicant is referring since he fails to provide any such results. The Examiner has assumed Applicant was referring to his assertion that the alloy of Mori would not have the enhanced seizure resistance that is present in the inventive alloy; however, applicant has provided no evidence to support this assertion. Furthermore, in Example 1 described on page 7

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of the instant specification, the particle size in the alloy is stated as being 3 μm . It is unclear how the Applicant could have demonstrated the unexpected or surprising result of enhanced seizure resistance due to the inclusion of particles having a size of greater than 10 μm since the only embodiment disclosed by Applicant has particle sizes which are less than the size which is claimed.

7. Any inquiry to this communication or earlier communications from the Examiner should be directed to Jason Savage, whose telephone number is (703)305-0549. The Examiner can normally be reached Monday to Friday from 6:30 AM to 4:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Deborah Jones, can be reached on (703)308-3822.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703)308-2351.



Jason Savage

6-27-02



DEBORAH JONES
SUPERVISORY PATENT EXAMINER